

Remarks

The Applicants have amended Claim 1 to incorporate the subject matter of Claim 2. Claim 2 has accordingly been cancelled. Also, a few editorial changes have been made. Further, Claim 1 has been amended to recite that the resin is a liquid thermosetting resin. Support may be found in paragraph [0073] of the Applicants' specification which refers specifically to a thermosetting resin with a low viscosity. One skilled in the art will readily recognize that such a resin in the claimed context is liquid as it is injected into the mold cavity.

Claim 10 has been amended to include the same recitation wherein the resin is a liquid thermosetting resin. A few additional editorial changes have been made.

Claim 50 has been amended to incorporate the subject matter of Claim 51. Claim 51 has accordingly been cancelled. Claim 50 has also been amended to recite that the resin is a liquid thermosetting resin and further includes a few editorial comments.

Finally, Claim 59 has been amended to recite that the resin is a liquid thermosetting resin and to provide a few editorial changes.

The above changes are made with the assumption that the changes made in the Response dated November 19, 2009 have been "entered" into the official file. This response is submitted with an RCE which requests such entry. Entry of the above amendments into the official file and consideration on the merits is respectfully requested.

Claims 1, 5-8, 10-12, 50, 54-57 and 59-62 stand rejected over the hypothetical combination of Seemann with Hettinga. The Applicants respectfully submit that the rejection is now moot with respect to Claims 1, 5-8, 50 and 54-57 in view of the incorporation of the subject matter of Claims 2 and 51 into Claims 1 and 50, respectively. The Applicants nonetheless respectfully submit that the hypothetical combination fails to provide disclosure, teachings or suggestions that would result in the subject matter of Claims 10-12 and 59-62.

The Applicants respectfully submit that Hettinga does not contain any description as to what type of resin to use and there is no description or suggestion as to impregnation of the resin into the hole of the substrate in a short period of time without causing voids and pinholes. In sharp contrast, the Applicants' Claims 10-12 and 59-62 do just that. Thus, Hettinga is inapplicable to those claims.

Seemann also fails to provide disclosure, teachings or suggestions that the resin is a liquid thermosetting resin. Accordingly, if one skilled in the art were to import the teachings of Seemann into those of Hettinga, the resulting methodology and devices from that combination would still not disclose the claimed liquid thermosetting resin. Withdrawal of the rejection is respectfully requested.

Claims 2, 9, 51 and 58 stand rejected under 35 USC §103 over the further hypothetical combination of Cushman with Seemann and Hettinga. The Applicants respectfully submit that the rejection is now moot with respect to cancelled Claims 2 and 51. However, the Applicants will address those claims as they would now hypothetically apply to Claims 1 and 50.

The Applicants' methods and devices as recited in Claims 1 and 50 carry out vacuum suction for a predetermined period of time. By this action, a synergistic and unexpected effect occurs. Residual bubbles in the reinforcing fiber laminate are removed by that action and occurrence of voids or pinholes in the fiber reinforced plastic is prevented, even when a pressured resin is injected, by enabling the impregnation pressure to increase by an amount corresponding to the difference with respect to atmospheric pressure. Thus, the resin can be impregnated in a shorter period of time.

On the other hand, in Hettinga, because the reinforcing fiber substrate is nipped by the upper and lower molds, the metal mold cannot be completely closed and it is difficult to form a vacuum inside the cavity. Therefore, the above-described effect would not be expected by those skilled in the art.

Hettinga presumes that the portion where the resin is impregnated is limited to the portion of resin frame 11 and the resin is not impregnated into the central portion of the fabric such as at the "central opening" in Claim 1. Specifically, it is stated that also as to the resin frame 11, the expression that the space around the substrate is filled with the resin is considered to be suitable, rather than impregnation into the substrate. Also, Figs. 5 and 7 suggest that the resin is not impregnated into a portion other than the resin frame portion.

There is no description in Hettinga as to what type of resin to use and there is no description or suggestion as to impregnation of the resin into the hole of the substrate in a short period of time without causing voids and pinholes. In sharp contrast, the Applicants can do just that.

Further, while the intermediate member of Hettinga is a thick block (block 18) provided with a plurality of through holes (multiple pathways), the Applicants' structure is very thin compared to the intermediate member of Hettinga and, further, an intermediate plate made of a resin such as polyethylene (paragraph [0079]) or a hole-open film can be used. In particular, while it is considered that in Hettinga the pressure of resin injection is high and a pressure resistance is required, the Applicants can use a resin, film member or the like. This is, as explained in paragraphs [0041]-[0043] and [0084], because the resin spreads through the grooves provided on the intermediate plate of the mold and is impregnated into the reinforcing fiber substrate through the through holes. It is not necessary to impregnate the resin at a high pressure such as a pressure causing wrinkles on the reinforcing fiber substrate as described in paragraphs [0008]-[0010] and the intermediate plate itself may be thin and for the intermediate plate a material, which does not require much pressure resistance.

The Applicants respectfully submit that both of Seemann and Cushman fail to provide additional disclosure, teachings or suggestions that would cure the deficiencies set forth above with respect to Hettinga. Thus, even if one skilled in the art were to import the teachings of Cushman and Seemann into Hettinga, there would still be a failure to disclose all of the subject matter of Claims 1 and 50. Withdrawal of the rejection is respectfully requested.

Claims 14 and 63 stand rejected under 35 USC §103 over the further hypothetical combination of Waldrop with Seemann and Hettinga. The Applicants respectfully submit that Waldrop fails to cure the deficiencies set forth above with respect to both of Hettinga and Seemann. Withdrawal of the rejection is respectfully requested.

Claims 15 and 64 stand rejected under 35 USC §103 over the additional hypothetical combination of Cundiff with Waldrop, Seemann and Hettinga. The Applicants respectfully submit that Cundiff fails to provide additional disclosure, teachings or suggestions that would cure the deficiencies set forth above with respect to Hettinga and Seemann. Withdrawal of the rejection is respectfully requested.

Claim 13 stands rejected under 35 USC §103 over the hypothetical combination of Foster with Seemann and Hettinga. The Applicants respectfully submit that Foster fails to provide any additional disclosure, teachings or suggestions that would cure the deficiencies above with respect to Hettinga and Seemann. Withdrawal of the rejection is respectfully requested.

Claims 18, 19, 67-69 stand rejected under 35 USC §103 over the hypothetical combination of Cushman with Seemann and Hettinga. The Applicants respectfully submit that Cushman fails to provide any additional disclosure, teachings or suggestions that would cure the deficiencies above with respect to Hettinga and Seemann. Withdrawal of the rejection is respectfully requested.

Claims 20-23 stand rejected under 35 USC §103 over the hypothetical combination of Freitas with Seemann and Hettinga. The Applicants respectfully submit that Freitas fails to provide any additional disclosure, teachings or suggestions that would cure the deficiencies above with respect to Hettinga and Seemann. Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC/vbm
(215) 656-3381